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ABSTRACT

Project PRIME is a multifaceted accelerated academic program that identifies minority group junior and senior high school students with academic aptitude and prepares them for college. Arizona is the site of Project PRIME's national demonstration pilot project because the state has a culturally diverse population and accessible urban, suburban, and rural areas. The goal is to double the number of students who attend college and to triple the number of students who major in science, engineering, and mathematics. The following components are described: (1) Algebridge, an accelerated mathematics program for seventh and eighth grade students; (2) Mathematics, Engineering, Science Achievement (MESA), an accelerated program for high school students identified as having potential for careers in mathematics; (3) TestSkills, a 15-week course to prepare high school sophomores to take the standardized tests required for college admission and scholarships; (4) Options for Excellence, an accelerated program for high school students that requires them to do college-level work; (5) Parents as Partners, a program to teach parents how to support their children's academic efforts; (6) Financial Aid and Academic Planning Information, a program that helps students and parents select high school courses and obtain financial aid; and (7) I Have a Dream, a program that provides financial resources for students to attend college. Total costs are calculated at \$80 per student unit of service. Statistical data are presented in one table and six graphs. (FMW)

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A Prospectus on

Project PRIME

A Project to Improve Minority Education

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Nationwide only one minority student out of every 10 goes to college.

Since minority students represent a full third of our college-age population, this statistic is one that concerns the Arizona Board of Regents and every other educational organization in the country.

Project PRIME is a multi-faceted program of accelerated academics. It identifies students—especially minority students—with ability at the junior high and high school levels and is designed to turn high-*potential* students into college-bound students.

Arizona has been chosen as Project PRIME's national demonstration pilot for a variety of reasons. The state has a large and growing minority population. That population is culturally diverse and includes readily accessible urban, suburban, rural and reservation areas. The Arizona educational community was instrumental in developing Project PRIME, and the Arizona Board of Regents is committed to supporting the program.

That's good for Arizona. Because over the next five years, approximately 250,000 of our students will be given the opportunity to participate in Project PRIME. And the experience will change many lives and surely have an impact on the economy.

It's also good for our nation as a whole. As a pilot program, Project PRIME will set a standard of academic excellence for all students--a standard that will be implemented nationwide once Project PRIME has proven itself in Arizona. Regardless of geographic location, all students will someday benefit from PRIME's unique components.

It doesn't take a lot of statistics to convey the scope of our problem in Arizona. And it doesn't take a lot of investigation to discover that these problems are cropping up nationwide, or that the problems are also found among majority students.

- In Arizona, minority students make up one-third of our college age population.
- Yet fewer than 11 percent attend college.

The problem doesn't actually begin after our students leave Arizona's high schools.

- Five of every 10 minority students never graduate from high school. They drop out.
- Of the remaining five students, four take a general or vocational curriculum in high school.
- Only one minority student out of every 10 goes on to college.

As our state's population expands, the problem will simply become larger.

- By the year 2000, one of every two students in Arizona will belong to a minority group—Hispanic, Native American or Black.
- By the year 2010, minority students will be the majority in the public schools of Arizona.

The long-range implications of this educational pattern are personally and publicly devastating.

- The median income for a high school dropout is only one-third that of a college graduate.
- The unemployment rate for minorities is 150 percent higher than that of the general population.

We must do a better job of identifying minority students with ability and preparing them for college--both in Arizona and nationwide.

- If nothing is done to change the pattern, we will soon face a crisis in available human resources.
- Unemployment, crime and literacy rates will be pushed to levels that are financially and morally insupportable.
- The quality of our labor force and the strength of our tax base will quickly erode.

Project PRIME was developed by the College Board, the Educational Testing Service, and the Hispanic Higher Education Coalition. Over the past several years, these organizations studied hundreds of programs throughout the country that were operating at the local level.

Seven of the most successful programs were developed for Project PRIME. The beauty of these components is the way in which they interact to create a very special synergism. The total is greater than the sum of its parts.

Four of Project PRIME's programs are strictly academic in nature. These programs of PRIME do more than accelerate and enhance the curriculums of participating students. They change attitudes and expectations as well.

Three other Project PRIME components provide essential support in other areas of the students' lives—including family and finances. Since students looking ahead to college need adult advocates, Project PRIME involves parents, teachers, counselors, business, industry, and the community at large.

The concrete goal of PRIME is to function statewide and involve at least one-third of Arizona's schools. At full strength, the project will reach approximately 50,000 students annually in grades seven through 12, affecting minority and majority students alike. Over the five years dedicated to the national demonstration pilot, 250,000 Arizona students will participate in one or more of the project components.

Additionally, PRIME seeks to double the number of participating students who go on to college, and to triple the number who major in science, engineering and math-related fields. By the end of one full project cycle, we are committed to increasing by 20 percent the number of Project PRIME students who graduate from high school. (As of 1987, the state of Arizona ranked 45th in the nation, with a high school graduation rate of 64.4 percent, compared to the U.S. average of 71.1 percent.)

With total costs calculated at \$80 per student unit of service, Project PRIME is a good investment in the future.

The seven components of Project PRIME are:

- *Algebridge*
- *Mathematics, Engineering, Science Achievement (MESA)*
- *TestSkills*
- *Options for Excellence*
- *Parents as Partners*
- *Financial Aid and Academic Planning Information*
- *I Have a Dream*

Each of these programs is discussed in greater detail on the following pages.

Algebridge

If the goal is to send more minority students to college, then more students are going to have to choose an academic curriculum in high school. Algebra is the key to college-track courses, and the decision to take it—or not to take it—is one of the most reliable indicators we have of a student's chances for a college education.

Algebridge is an accelerated math program for seventh and eighth grade students, as well as high school students who have not taken algebra yet. Tested at several locations around the country, the program identifies students with ability and gives them the opportunity to move ahead in math. The curriculum was developed by the College Board and the Educational Testing Service. It introduces students to algebraic thinking and prepares them to succeed in high school algebra. Project PRIME is committed to doubling each year the number of *Algebridge* students who subsequently take and successfully pass high school algebra.

Status Report

Project PRIME has made an intensive effort to implement *Algebridge* in the State of Arizona. Since January 1989, mathematics specialists who wrote *Algebridge* have come repeatedly to Arizona at the expense of our partners, the Educational Testing Service and the College Board. The *Algebridge* authors instructed 128 teachers in the spring and 57 teachers (so far) in the fall in the use of the program. They have also trained two Project PRIME-affiliated mathematics educators from Arizona to train others in the state. During the spring 1989 semester, approximately 5,000 seventh, eighth, and ninth graders studied *Algebridge*. Project PRIME is committed to serving at least 6,000 students with *Algebridge* during the academic year 1989-1990.

Mathematics, Engineering, Science Achievement (MESA)

Mathematics, Engineering, Science Achievement (MESA) is one of the most successful academic programs ever implemented. The program identifies high school students with the ability to pursue careers in science and science-related fields.

The curriculum is jointly developed by high schools, junior colleges and the universities, with strong input from business and industry. The students study college prep math, science and English. They must maintain above average grades and participate in student meetings, study and tutoring sessions, field trips, academic and career counseling and a 10th grade summer enrichment program. Special counseling, career development and incentive programs further encourage academic achievement.

Project PRIME will bring the *MESA* program to students in every part of Arizona.

Status Report

The State of Arizona already has a fledgling *MESA* program, which is run on a cooperative basis by the higher education community (consisting of the three state universities and a number of community colleges) and a group of participating corporations, including Motorola, Digital Equipment, GTE, Sperry, U.S. West, Salt River Project (a utility), General Instruments, Hughes Aircraft, IBM, Intel, and Arizona Public Service.

PRIME has joined forces with the state *MESA* Board, two community colleges and their feeder high schools to begin implementing a PRIME/*MESA* program.

TestSkills

TestSkills is a 15-week course for high school sophomores. It prepares them to take all the standardized tests necessary for college admission and/or possible scholarships.

The course reviews the content of the SAT, ACT and National Merit Scholarship Tests, and helps students become familiar with their format. That's important.

Typically, many students have not had access to the kinds of private courses, study guides, computer programs, and other instructional aids that prepare other students to take standardized tests.

When the program was field-tested, teachers found that the course accomplished more than simply improving the students' mathematical and verbal skills. Certainly, it proved successful in helping students to improve their test scores. But it also encouraged many students to take the test who had never considered college a part of their future!

Beginning in its second year (1990-1991), Project PRIME hopes to double the number of participating students who take the Preliminary Scholastic Aptitude Test (PSAT). The PSAT is used to determine a student's eligibility for National Merit Scholarships, National Hispanic Scholarships, National Negro Scholarships, and many other grants and awards for college. Beginning in PRIME's third year (1991-1992), our goal is to increase the average PSAT test score among participating students by a minimum of 100 points. Also beginning in the third year, PRIME seeks to increase the average Scholastic Aptitude Test (SAT) or American College Test (ACT) score among participating students to a level that supports PRIME's goal of doubling the number of Project PRIME students who go on to college.

Status Report

At the expense of our partners, the Educational Testing Service and the College Board, the author of *TestSkills* instructed approximately 57 teachers to administer the program during the spring of 1989. Additional training sessions are scheduled for the 1989-1990 academic year. In the spring of 1989, approximately 250 students studied *TestSkills* under Project PRIME, and the project is committed to serving at least 750 students during the academic year 1989-1990.

Options for Excellence

Options for Excellence is the academic heart of Project PRIME. Potentially outstanding high school students are given special classes that require them to do college level work while still in high school.

At the completion of the course work, advanced placement exams are offered by the College Board in fifteen different curriculum areas. These include the arts, humanities, social sciences, mathematics, and biological and physical sciences. Students who demonstrate by examination that they are qualified will receive college credit for the work they're accomplishing in high school.

In the Arizona demonstration of Project PRIME, academic competitions will be added to the concept. Students will train in a variety of disciplines, and academic olympiads will be conducted at the local, county and state levels.

Options for Excellence is an outstanding program. In the San Antonio area it achieved 500-700 percent increases in the actual numbers of Hispanic high school students going on to college. In fact, Southside High School in San Antonio increased its college bound population from 10 percent to more than 50 percent of its entire graduating class.

In East Los Angeles, the program has been equally successful. Garfield High School now ranks fourth among the nation's public schools with respect to the number of students who successfully take advanced placement examinations with a score of 3 or better (out of a possible score of 5). Last year, for example, Garfield had 496 students take AP examinations. Garfield has a population that is heavily minority, with no economic advantages.

Project PRIME is committed to tripling the percentage of participating students who successfully take AP exams with a score of 3, 4, or 5.

Status Report

In 1987, Garfield High presented 129 examinations in calculus, while only 395 calculus AP examinations were taken in the entire state of Arizona. Of this group, a total of 19 calculus AP examinations were taken by American Indian, Black, and Hispanic students combined.

In the summer of 1989, to help remedy Arizona's situation, Project PRIME (with the aid of the College Board) organized the largest AP training institute

for high school teachers in the history of the state. Courses for English, calculus, chemistry, Spanish, and biology were offered, and 44 teachers attended. In addition, special *Options for Excellence* sessions were offered for school administrators.

Notable speakers from around the country, including Henry Gradillas, former principal of Garfield High School, spoke on establishing AP courses in schools and school districts.

Parents as Partners

Children need advocates. They need adults to guide them, encourage them, teach them, keep them from closing doors before they ever understand what's on the other side. Parents are an obvious influence. But it's very difficult to teach your children how to succeed in school when your own experience was limited. And that's the reality for about 50 percent of minority parents.

Parents as Partners is a critical component of Project PRIME. Counselors from the universities go out to local schools, community organizations and churches to work with parents on individual problems at the grass roots level. With a special set of training materials, parents learn how to function as successful advocates of education, and how to create a home environment that reinforces and expands learning.

Parents are asked to sign a contract agreeing to monitor their child's homework, and are given a toll free 800 number for follow-up assistance. The training program also teaches parents how to communicate with teachers, evaluate a curriculum and judge its long-term potential.

If we're going to turn educational patterns around, then we must strengthen the partnership that joins parents to their schools and the community at large. So in each participating school, *Parents as Partners* will also organize and sponsor a local Committee for Academic Excellence. The organization provides the community with a continuing open forum for assessing educational opportunities and developing a variety of cooperative projects.

In short, *Parents as Partners* is a program of hope. It guides parents through the system and enables them to become part of it.

Status Report

In the spring of 1989, Project PRIME piloted a small *Parents as Partners* program that was run by a local community-based organization in Maricopa County. The 1989-1990 academic year marks a large-scale implementation of *Parents as Partners* on behalf of 7,500 students. Local chapters of *Parents as Partners* will be set up in each of the schools where Project PRIME currently implements *Algebridge*, *TestSkills*, *MESA*, and/or *Options for Excellence*. In addition, Project PRIME is committed to preparing a guide for parents on how to help their students achieve more in school, as well as a newsletter directed in large measure to the parents participating in Project PRIME. We also hope to explore the feasibility of including grandparents as well.

Financial Aid and Academic Planning Information

Financial Aid and Academic Planning Information helps students and their parents select the right courses in order to attend college and acquire the necessary funds in order to stay in college.

The average cost of a four-year college education at any one of Arizona's three universities is now about \$30,000. While that's an almost unimaginable amount of money to many families, financial aid is available in a variety of forms. Of course, the paper mill for scholarships, student loans, and work/study programs is both confusing and complicated, and the people who most need the financial aid are oftentimes unaware of what's available and who's eligible.

For this reason, Project PRIME will be distributing special information packets to students and parents all over the state. Compiled and underwritten by the College Board and the Educational Testing Service, the packets contain all the information needed to begin planning successfully for a college education. A second binder of information will be made available to each of the guidance counselors participating in Project PRIME.

Status Report

The parent/student financial aid and academic planning information is now complete and in production. The information binder for high school guidance counselors is also very near completion. Project PRIME is scheduling distribution of both the parent/student and the guidance counselor materials in the spring of 1990.

I Have a Dream

I Have a Dream is perhaps the most dynamic and imaginative program operating anywhere in the country.

It began in New York City when industrialist and philanthropist Eugene Lang adopted his old school, Public School 121, in Harlem. He promised the students that he would financially provide for their college education if they would commit to staying in school and applying themselves to their studies. The program was two-fold, involving special classroom counseling as well as the necessary financial aid.

A resounding success, *I Have a Dream* is now operating in 14 other cities, including Los Angeles, Hartford, San Antonio, San Francisco and Denver.

Project PRIME will bring the concept to the students of Arizona. Special counselors from our three universities will work directly with participating schools. Working through *Parents as Partners*, they will offer academic and motivational support to students. In addition, they will help families to find the financial resources necessary for college.

I Have a Dream may be an idealistic concept, but it's also practical. The program simply asserts that students with ability belong in college.

The key to making *I Have a Dream* a success lies in securing sufficient financial aid so that students who participate in Project PRIME will not be denied the opportunity to go to college simply because of a lack of financial resources.

Status Report

In Arizona, we are exploring various possible partnerships for the *I Have a Dream* component of Project PRIME. We have found that a major barrier to implementation in other cities has been the high cost of administering the program and providing tutors and other retention measures. As a component of Project PRIME, *I Have a Dream* is the final step in the realization of receiving a college education. Therefore, the program is preceded by four years of academic and support programs. This means that students who have participated in various components of PRIME will be academically prepared and informed of funding options above and beyond *I Have a Dream*.

We are currently exploring the most cost-effective ways of providing a "Dream Fund" by joining with local fund-raising efforts, rather than competing with them. For example, at Arizona State University, a presidentially mandated "Cultural Leadership Scholarship" endowment has been established. One-third of the endowment's \$3 million goal has already been pledged. By expanding the scholarship's eligibility requirements to include participation in one or more component of PRIME, ASU is able to provide for Project PRIME's students who choose to attend the university.

This initial approach allows each institution, including community colleges, to tailor and enhance their current scholarship efforts.

There are other long-term possibilities which we continue to explore. PRIME is currently working with local media to consider an annual drive that may be televised and allows donors to designate their donations to a particular institution. We are also talking with local corporations about employee incentive programs and the establishment of a state "Dream Fund."

Projected Sources of Funding for Project PRIME

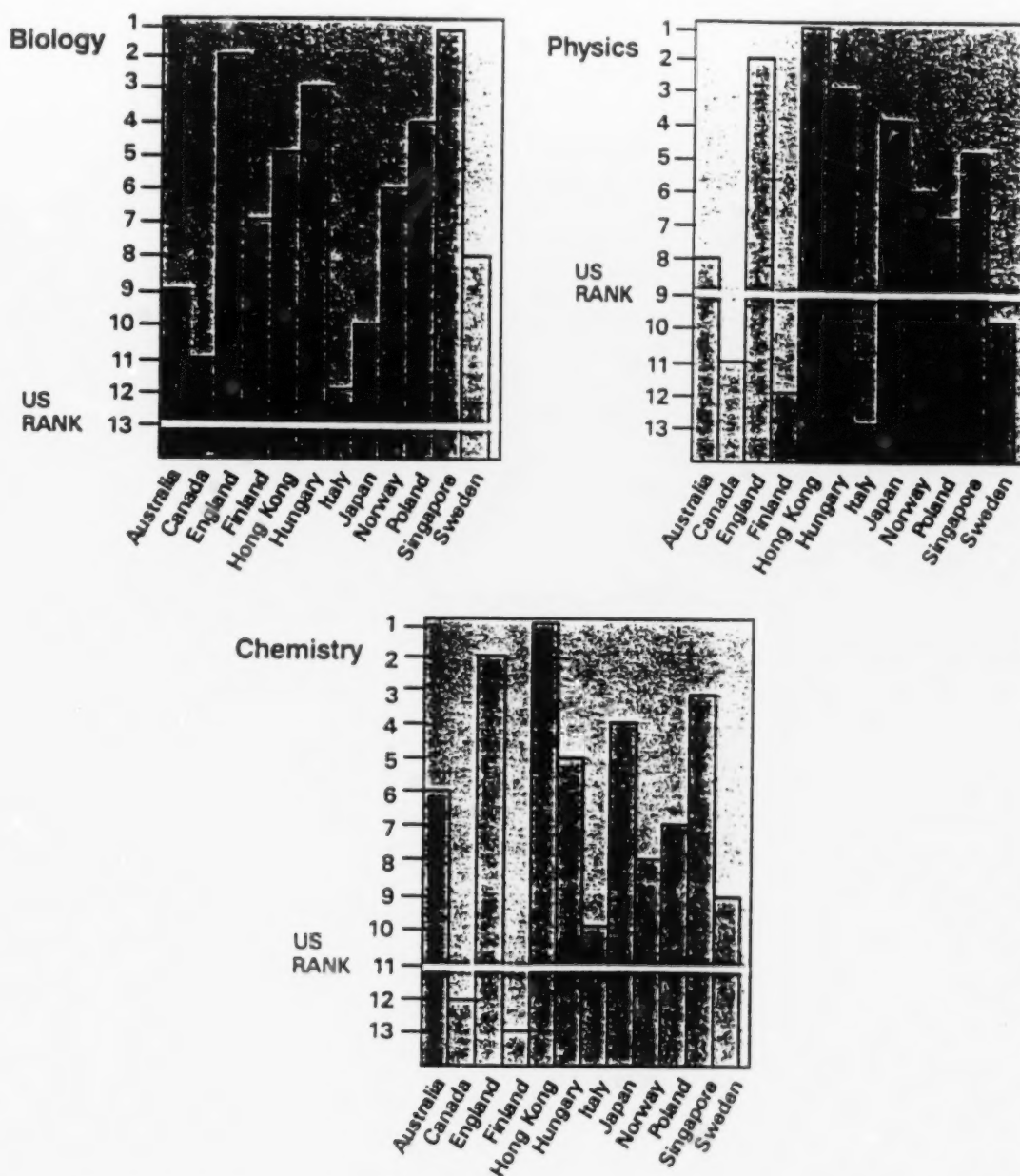
The College Board, the Educational Testing Service and the Hispanic Higher Education Coalition have collectively spent over \$1.5 million to develop the materials and strategies for Project PRIME. Over the next five years, they will continue to allocate funding for that purpose. In addition, the Arizona Legislature, the Arizona Board of Regents and Arizona State University have committed more than \$500,000.

Operational costs are estimated at \$20 million, or \$80 per student, and every sector of the community is expected to contribute to that funding effort. The following are Project PRIME's projected sources of funding over the next five years.

Federal Government	
\$5,000,000.....	25%
Arizona State Legislature	
\$5,000,000.....	25%
Private Foundations	
\$5,000,000.....	25%
Business & Industry	
\$5,000,000.....	25%

Figure 5

Twelfth Grade Scores on International Science Achievement Tests

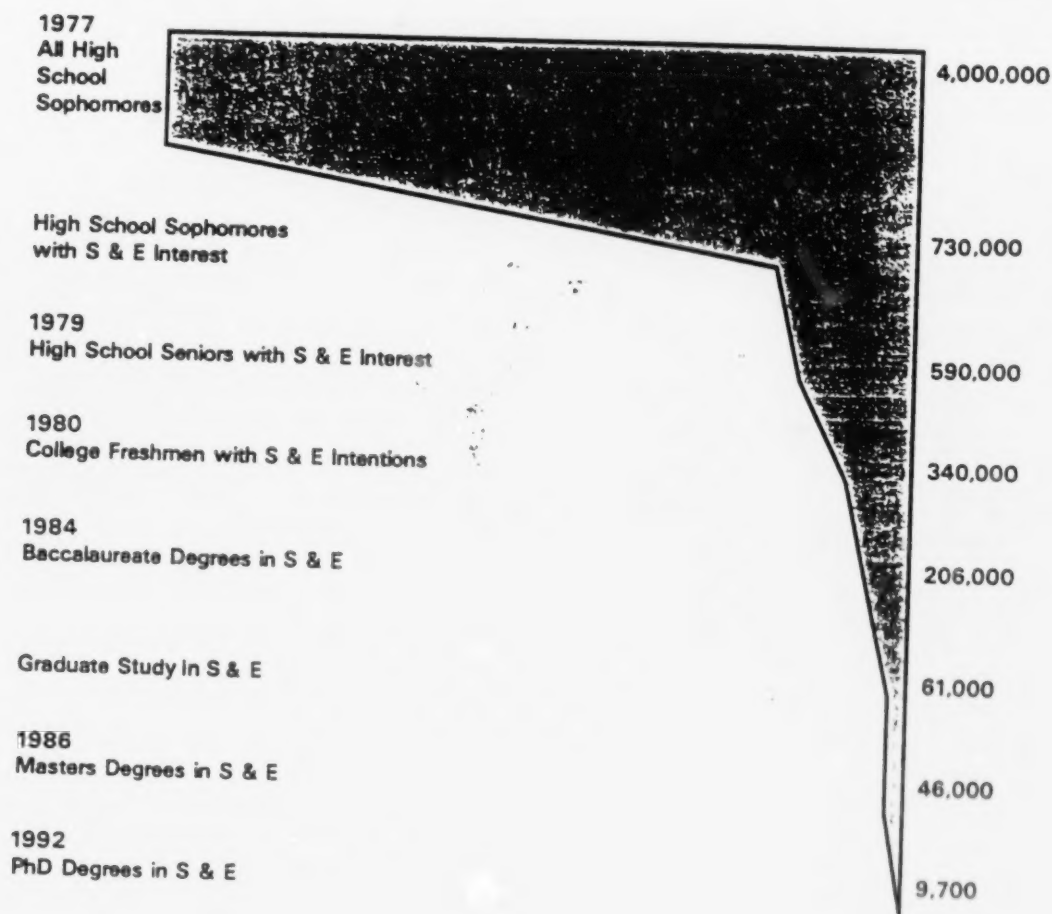


Among the 13 countries participating in these science achievement tests, U.S. students scored 13th in biology, 11th in chemistry, and 9th in physics.

Source: International Association for Evaluation of Educational Achievement.

Figure 7

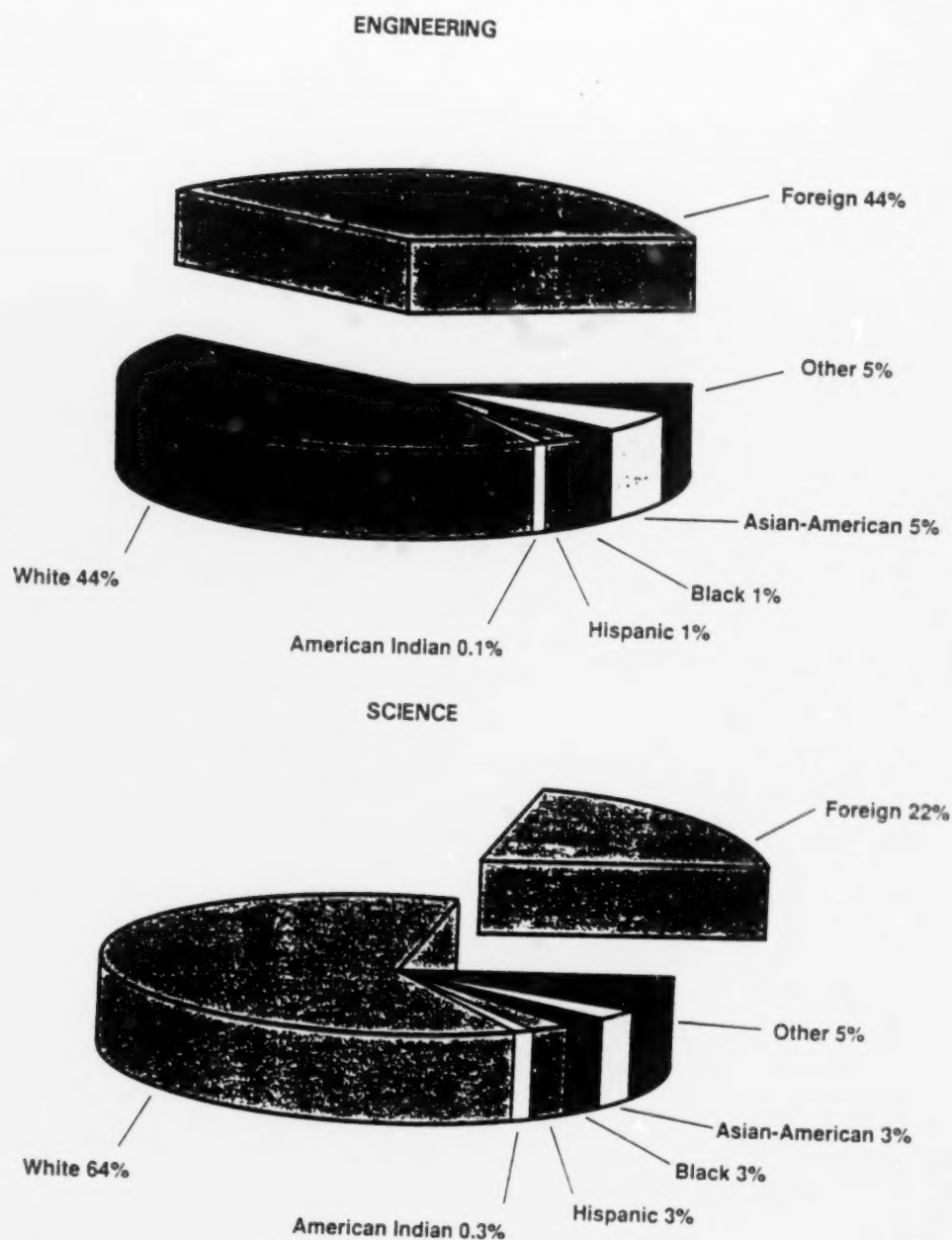
Science & Engineering Pipeline, from High School through Ph.D. Degree



Analysis of the 4 million students in the 10th grade in 1977 shows the pattern of attrition as they move through the educational pipeline. Approximately 9,700 or 0.24 percent are expected to attain the Ph.D. in science and engineering.

Source: National Science Foundation.

Figure 8
Distribution of Graduate Students, 1986



U. S. students' declining interest in science and engineering carries through to graduate school where the participation of foreign nationals has increased dramatically in recent years.

Source: National Science Foundation.